

Appln No. 09/848,052

Amdt date June 7, 2005

Reply to Office action of March 25, 2005

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method for analyzing performance of a wireless location system comprising the steps of:

storing data related to location equipment, wireless infrastructure, handsets, terrain map, and morphology map;

generating a site radial file for predicting path loss and predicting time/angle error based on the stored terrain and morphology maps;

computing a multi-site forward and a multi-site reverse link signal strength map for determining coverage of the location system;

generating a multi-site ~~margin/error~~ margin map and a multi-site delay/angle error map from the computed multi-site forward and reverse link signal strength map and the stored data; and

generating a location error estimate map for the wireless location system from covariance at each point in the ~~margin/error~~ margin map and the multi-site delay/angle error map; and

~~generating an error estimate map for the location system.~~

2. (Original) The method of claim 1, further comprising the step of displaying the generated error estimate map.

3. (Original) The method of claim 1, further comprising the step of storing the generated error estimate data.

Appln No. 09/848,052

Amdt date June 7, 2005

Reply to Office action of March 25, 2005

4. (Currently Amended) The method of claim 1, wherein the step of generating a site radial file for path loss and time/angle error comprises the steps of:

extracting a number of radials per each sector of the site;

extracting a number of points for each radial;

computing $4/3$ earth altitudes at each point along each radial;

computing a propagation prediction model to generate a path loss including effects of diffraction and antenna height at each point along each radial;

computing loss due to antenna pattern; and

computing angle/time time/angle errors at each point along each radial.

5. (Original) The method of claim 1, wherein the multi-site map for path loss includes at each point, path loss for the best wireless server and error data for a site with highest received signals.

6. (Original) The method of claim 1, further comprising the step of converting the generated radial file to a cluster map for path loss and time/angle error.

7. (Original) The method of claim 6, wherein the step of converting comprises the steps of:

determining a box map dimensions to fit the radial signal file;

generating a signal map entry for each latitude and longitude in the box map; and

storing path loss and error in the box map.

Appln No. 09/848,052

Amdt date June 7, 2005

Reply to Office action of March 25, 2005

8. (Currently Amended) The method of claim 1, wherein the step of computing a multi-site forward and a reverse link signal strength map comprises the steps of:

invoking stored terrain and morphology information;
selecting a stored propagation prediction model from a plurality of stored propagation prediction models;
computing a forward link propagation loss using the selected propagation prediction model; and
determining a likely server for a given location.

9. (Original) The method of claim 1, further comprising the step of computing a multi-site RX power map.

10. (Currently Amended) The method of claim 8, wherein the step of computing a multi-site RX power map comprises the steps of:

using a mobile unit power control window and an estimate of received signal strength on the reverse link for setting a mobile unit's transmit power;
generating the mobile unit Tx power map.; and
using the generated mobile unit Tx power map for generating a multi-site RX power map.

11. (Currently Amended) The method of claim 1, wherein the step of computing a multi-site forward and a reverse link signal strength map comprises the step of selecting a ~~location determination~~ propagation prediction algorithm from a plurality of stored ~~location—determination~~ propagation prediction algorithms, wherein inputs to the selected ~~location determination~~ propagation prediction algorithm includes one or more of terrain information, location and heights of mobile receiver; location and heights of fixed receiver, land use,

Appln No. 09/848,052

Amdt date June 7, 2005

Reply to Office action of March 25, 2005

major road structures, and peculiar obstacles defined in the area.

12. (Original) The method of claim 1, wherein the wireless infrastructure includes one or more of location system type, location system name; unit type; location receivers' antenna category; location system antenna locations; antenna type; number of antenna units at a given installation; location system antenna elevation; location system antenna height; and cabling losses.

13. (Currently Amended) The method of claim 1, wherein the wireless infrastructure includes one or more of air interface type; cell site locations; site elevation; site height; Number of sectors; antenna gain TX and RX; downtilt; number of channels; control/signaling and voice channel assignments; transmit powers; and mobile unit power control window upper and lower limits.

14. (Original) The method of claim 1, further comprising the step of editing the stored morphology map.

15. (Original) The method of claim 1, further comprising the steps of reading, maintaining, and displaying one or more of interstate roads, major roads, and secondary roads.

16. (Original) The method of claim 1, further comprising the step of performing sensitivity analysis by adjusting a parameter.

17. (Original) The method of claim 1, further comprising the steps of generating an output in form of one or more of

Appln No. 09/848,052

Amdt date June 7, 2005

Reply to Office action of March 25, 2005

average errors, RMS errors, number and identity of location receivers, and coverage availability.

18. (Currently Amended) The method of claim 1, further comprising the step of storing in a database information specific to a location technology including one or more of type of technology; antenna types; receiver sensitivities data; receiver noise data; receiver bandwidth; integration time; known receiver biases; receiver jitter; transfer function; presence of quality ~~indicator's~~ indicators at receiver or receiver type; and quality indicators computation.

19. (Original) The method of claim 1, further comprising the step of importing data from an outside database.

20. (Currently Amended) A system for performance analysis of a location system comprising:

means for generating a radial model and a radial map including a plurality of radial paths for a site from a stored raster map;

means for selecting a propagation model from a stored plurality of propagation models for predicting a path loss along each radial path;

at each point along a radial path, means for predicting accumulated angular errors and time delay errors; and

means for generating an error estimate from the path loss and the accumulated angular errors and time delay errors due to terrain and morphology.

21. (Original) The system of claim 20, further comprising means for displaying the generated error estimate map.

Appln No. 09/848,052

Amdt date June 7, 2005

Reply to Office action of March 25, 2005

22. (Original) The system of claim 20, further comprising means for storing the generated error estimate data.

23. (Original) The system of claim 20, further comprising means for generating a location error estimate map.

24. (Currently Amended) The system of claim 20, wherein the means for generating a radial file comprises:

means for extracting a number of radials per each sector of a site;

means for extracting a number of points for each radial;

means for computing $4/3$ earth altitudes at each point along each radial;

means for computing a propagation model to generate a path loss including effects of diffraction and antenna height;

means for computing loss due to antenna pattern; and

means for computing angle/time time/angle errors.

25. (Original) The system of claim 20, further comprising means for converting the generated radial file to a cluster map for path loss and time/angle error.

26. (Original) The system of claim 20, further comprising means for computing a multi-site RX power map.

27. (Original) The system of claim 26, wherein the means for computing a multi-site RX power map comprises:

means for using a window of received signal strength on the reverse link for setting a mobile unit's transmit power;

means for generating the mobile unit Tx power map.; and

means for using the generated mobile unit Tx power map for generating a multi-site RX power map.

Appln No. 09/848,052

Amdt date June 7, 2005

Reply to Office action of March 25, 2005

28. (Original) The system of claim 20, further comprising means for performing sensitivity analysis by adjusting a parameter.

29. (Original) The system of claim 20, further comprising means for of generating an output in form of one or more of average errors, RMS errors, number and identity of location receivers, and coverage availability.

30. (Original) The system of claim 20, further comprising means for importing data from an outside database.

31. (Currently Amended) A computer readable medium having stored thereon a set of instructions including instruction for performance analysis of a location system the instructions, when executed by a computer, cause the computer to perform the steps of:

generating a radial model and a radial map including a plurality of radial paths for a site from a stored raster map;

selecting a propagation model from a stored plurality of propagation models for predicting a path loss along each radial path;

at each point along a radial path, predicting accumulated angular errors and time delay errors; and

generating an error estimate from the path loss and the accumulated angular errors and time delay errors due to terrain and morphology.